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# **Glossary**

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## GLOSSARY

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<u>Item</u>	<u>Explanation</u>
<b>AADT</b>	Average Annual Daily Traffic.
<b>Acid precipitation precursors</b>	Acid rain precursors; NO <sub>x</sub> and SO <sub>x</sub> as an example.
<b>Act, The</b>	The Manitoba Environment Act.
<b>Activated Sludge</b>	The biomass mixture consisting of bacteria and protozoa feeding on raw or settled wastewater.
<b>Aerobic</b>	In the presence of oxygen.
<b>Allochthonous</b>	Food material reaching an aquatic community in the form of dead or decaying organic matter.
<b>Alteration</b>	To change a development or a proposal or to close, shut down or terminate a development where the alteration causes or is likely to cause a significant change in the effects of the development on the environment.
<b>Ambient</b>	Surrounding, encircling - pertaining to any local non-point source conditions such as temperature, air quality or noise levels.
<b>Anaerobic</b>	The absence of free or bound oxygen.
<b>Ancillary</b>	Additional processes / procedures above normal operation.
<b>Anoxic</b>	The absence of free oxygen, dissolved oxygen is less than 0.5 mg/L.
<b>Anthropogenic</b>	Cause, produced or derived from human activities.
<b>Aquifer</b>	A geological formation of permeable rock, sand, or gravel that conducts groundwater and yields significant quantities of water to springs and wells.
<b>Archaeology</b>	The scientific study of past human cultures by analyzing the material remains.
<b>Bedrock</b>	Solid rock that underlies soil, sand, clay, gravel, and loose materials on the Earth's surface.
<b>Benthic</b>	Dwelling on, or pertaining to, the bottom of a body of water.
<b>Bentonite</b>	A colloidal clay formed from volcanic ash that can absorb large amounts of water and expands greatly in doing so. It is often used as a liner or seal in soils.
<b>Berm</b>	A sloped wall or embankment used to prevent the inflow or outflow of material into/from an area.
<b>Biosolids</b>	Nutrient-rich organic residual materials resulting from the treatment of wastewater which are often used as fertilizer.
<b>BLTO</b>	Brandon Land Title Office.
<b>BOD</b>	Biochemical Oxygen Demand.
<b>BOD<sub>5</sub></b>	5-Day Biochemical Oxygen Demand.
<b>Calcareous</b>	Containing a large amount of calcium carbonate.
<b>CBOD<sub>5</sub></b>	Carbonaceous 5-day Biochemical Oxygen Demand.
<b>CEC</b>	Clean Environment Commission.
<b>Chlorination</b>	The use of chlorine compounds such as Cl <sub>2</sub> , NaOCl, Ca(OCl) <sub>2</sub> and ClO <sub>2</sub> for the purpose of disinfection.
<b>Citric Acid</b>	A weak organic acid used to clean membranes.

<b>Class 5 Forestry</b>	Moderately severe land limitations to the growth of commercial forests.
<b>Class 6 Forestry</b>	Severe land limitations to the growth of commercial forests.
<b>Class 8 Forestry</b>	Unclassified area – unmapped area.
<b>Class 2 Soils</b>	Soils with moderate limitations that restrict the range of crops or require moderate conservation practices.
<b>Class 3 Soils</b>	Soils with moderately severe limitations that restrict the range of crops or require special conservation practices.
<b>Class 4 Soils</b>	Soils with severe limitations that restrict the range of crops or require special conservation practices.
<b>Class 2 Ungulates</b>	Very slight land limitations to the production of ungulates.
<b>Class 3 Ungulates</b>	Slight land limitations to the production of ungulates.
<b>Class 4 Ungulates</b>	Moderate land limitations to the production of ungulates.
<b>Class 5 Ungulates</b>	Moderately severe land limitations to the production of ungulates.
<b>Class 8 Ungulates</b>	Unclassified area – unmapped area.
<b>Class 5 Waterfowl</b>	Moderately severe land limitations to the production of waterfowl.
<b>Class 6 Waterfowl</b>	Severe land limitations to the production of waterfowl.
<b>Class 7 Waterfowl</b>	Such severe land limitations that almost no waterfowl are produced.
<b>Class 8 Waterfowl</b>	Special cases – unmapped area.
<b>Clay</b>	A fine-textured, sedimentary or residual deposit consisting of hydrated silicates of aluminum mixed with various impurities
<b>CLI</b>	Canada Land Inventory.
<b>Constant head test</b>	The permeability of a material as measured under a constant fluid level.
<b>CO</b>	Carbon Monoxide.
<b>CO<sub>2</sub></b>	Carbon Dioxide.
<b>CO<sub>2</sub>e</b>	Equivalent carbon dioxide; the concentration of carbon dioxide that would cause the same amount of radiative forcing as a given mixture of carbon dioxide and other greenhouse gases.
<b>COD</b>	Chemical Oxygen Demand.
<b>Conductivity</b>	The ability of an aqueous solution to carry electrical current.
<b>Continental Climate</b>	The type of climate found in the interior of the major continents in the middle, or temperate, latitudes. The climate is characterized by a great seasonal variation in temperatures, four distinct seasons, and a relatively small annual precipitation.
<b>Cretaceous Period</b>	A geological time period that occurred during the Mesozoic era and lasted from 144 to 65 million years ago.
<b>DAF / DAFT</b>	Dissolved Air Flotation / Dissolved Air Flotation Thickener unit used in the proposed wastewater treatment process.
<b>Decant</b>	The removal of the top layer of liquid after the solids have settled out.
<b>Dechlorination</b>	The removal or deactivation of potentially toxic chlorine residuals.
<b>Deltaic deposits</b>	Accumulations of sand, silt, clay, and organic matter deposited at the mouth of a river delta.
<b>Denitrification</b>	The process that uses microorganisms to convert nitrate to nitrogen gas in the presence of readily biodegradable organic matter.
<b>DGHTA</b>	Dangerous Goods Handling and Transportation Act.
<b>Diel fluctuations</b>	Fluctuations that occur over a period of 24 hours.

<b>DOC</b>	Dissolved Organic Carbon.
<b>Dissolved oxygen</b>	DO; the amount of oxygen dissolved in water.
<b>Ecoregion</b>	Large unit of land characterized by various items including distinctive climate, ecological features and terrestrial communities.
<b>Ecozone</b>	The largest scale biogeographic division of the earth's surface based on the historic and evolutionary distribution patterns of plants and animals
<b>Effluent</b>	The flow of treated wastewater from a treatment facility.
<b>Emergent plant</b>	A plant rooted in shallow water with most of the stem and leaves above water.
<b>ERP</b>	Emergency Response Plan.
<b>Erosion control techniques</b>	Methods used to prevent or reduce the risk or erosion from disturbed sites. Methods include re-vegetation, riprap and silt fences.
<b>Escherichia coli</b>	A gram-negative, facultatively anaerobic, non-spore-forming bacillus commonly found in the intestinal tracts of humans and other warm-blooded animals. Escherichia coli is used as a primary indicator of recent fecal pollution.
<b>Eutrophic</b>	A body of water typically excessively rich in dissolved nutrients and poor in dissolved oxygen.
<b>Falling head test</b>	The permeability of a material as measured under a decreasing fluid level.
<b>Fauna</b>	All animal life in a particular region.
<b>Ferric chloride</b>	FeCl <sub>3</sub> ; a metal salt.
<b>Fecal coliform</b>	Bacteria present in the intestinal tract and feces of warm-blooded animals.
<b>Flood plain</b>	Area of land adjacent to a watercourse that is covered by water during a flood.
<b>Flora</b>	All plant life and vegetation in a particular region.
<b>Flow Attenuation</b>	A process to achieve a near constant flow rate by damping flow rate variations to improve the performance of downstream processes and reduce the size and cost of facilities.
<b>Forcemain</b>	Pressurized pipeline.
<b>Geocomposite</b>	Any combination of geotextiles, geomembranes and geogrids/ geonets.
<b>Geomembrane</b>	A synthetic membrane, often made of polyvinyl chloride (PVC) or high density polyethylene (HDPE), and typically used as a soil liner.
<b>Geotextile</b>	A product used as a soil reinforcement agent and as a filter medium. It is made of synthetic fibers manufactured in a woven or loose nonwoven manner to form a blanket-like product.
<b>Greenhouse gas</b>	GHG; predominately CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, PFCs, HFCs, and SF <sub>6</sub> .
<b>Groundwater</b>	Water that exists beneath the earth's surface in underground streams and aquifers.
<b>Hazard</b>	A source of risk that does not necessarily imply potential for occurrence.
<b>HC</b>	Hydrocarbons; compounds composed of carbon and hydrogen.
<b>Heritage resource</b>	Item of archaeological significance.
<b>HDPE</b>	High Density Polyethylene
<b>Hydrogeology</b>	The study of the distribution of groundwater.
<b>Hydrology</b>	The study of the distribution and movement of water.
<b>Hydrometric station</b>	An active water level and streamflow station that collects surface water quality and sediment data.
<b>Hytek Ltd.</b>	One of Canada's largest hog producers headquartered in La Broquerie, Manitoba. Springhill Farms L.P. is a subsidiary of Hytek Ltd.

<b>Influent</b>	The flow of wastewater into the treatment facility.
<b>IWWTF</b>	Industrial Wastewater Treatment Facility
<b>Jurassic Period</b>	A historical time interval that occurred during the Mesozoic Era and lasted from 144 to 208 million year ago.
<b>Labour Force Participation Rate</b>	The percentage of the population over the age of 15 that are employed.
<b>Lacustrine</b>	Sediment deposits related to a lake.
<b>Lagoon / Cell</b>	A large relatively shallow earthen structure commonly used for the storage, stabilization and treatment of liquid waste.
<b>Limestone</b>	A sedimentary rock, mainly calcium based, deposited by the remains of marine animals.
<b>Loam</b>	A loose mixture of clay, sand, and silt.
<b>Local</b>	Within 3 km (1.9 mi).
<b>Magnesium Hydroxide</b>	MgOH; chemical used to adjust the pH of wastewater.
<b>m.a.s.l.</b>	Metres Above Sea Level.
<b>MBR</b>	Membrane Bioreactor; A biological reactor (bioreactor) with suspended biomass and solids separation by microfiltration membranes used for wastewater treatment.
<b>Metal salt</b>	A salt of a metal cation and an anion such as Alum ( $\text{Al}_2(\text{SO}_4)_3 \cdot 14\text{H}_2\text{O}$ ), Sodium Aluminate ( $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3$ ), Ferric Chloride ( $\text{FeCl}_3$ ), Ferrous Chloride ( $\text{FeCl}_2$ ), Ferrous Sulfate ( $\text{FeSO}_4 \cdot \text{H}_2\text{O}$ ) or Ferric Sulfate ( $\text{Fe}_2(\text{SO}_4)_3$ ).
<b>Methane</b>	$\text{CH}_4$ ; an odourless, colorless, flammable gas that is the major constituent of natural gas.
<b>Mitigation</b>	Actions taken to improve site conditions by limiting, reducing or controlling hazards and contamination sources.
<b>Mixed liquor suspended solids</b>	MLSS; suspended solids in a wastewater and activated sludge mixture.
<b>MCPA</b>	(2-methyl-4-chlorophenoxy) acetic acid, $\text{C}_9\text{H}_9\text{ClO}_3$ ; a powerful and selective phenoxy herbicide.
<b>MPN</b>	Most Probable Number; method used in enumerating microorganisms.
<b>MWQSOG</b>	Manitoba Water Quality Standards, Objectives and Guidelines.
<b>MSDS</b>	Material Safety Data Sheets.
<b>MWSB</b>	Manitoba Water Stewardship Board.
<b>N</b>	Nitrogen.
<b><math>\text{N}_2</math></b>	Nitrogen gas.
<b>NLTO</b>	Neepawa Land Titles Office.
<b>NO</b>	Nitric Oxide.
<b><math>\text{NO}_x</math></b>	Nitrous Oxides, Nitrogen oxides.
<b>NFPA</b>	National Fire Protection Association.
<b><math>\text{NH}_3</math></b>	Ammonia.
<b><math>\text{NH}_4</math></b>	Ammonium.
<b><math>\text{NO}_2</math></b>	Nitrogen Dioxide.
<b>Nitrification</b>	The process whereby ammonia is oxidized to nitrate by particular groups of microorganisms.
<b><math>\text{NO}_3</math></b>	Nitrate.

<b>NOA</b>	Notice of Alteration; required for alterations to a licensed development.
<b>NPRI</b>	National Pollutant Release Inventory.
<b>O<sub>3</sub></b>	Oxidants Ozone / Tropospheric Ozone.
<b>Outfall</b>	The place where effluent is discharged into receiving waters.
<b>Oxidant</b>	A solution containing oxygen that reacts chemically with other materials to produce new substances.
<b>Oxidized</b>	Combined with or having undergone a chemical reaction with oxygen.
<b>Ozone Precursors</b>	VOC, NO <sub>x</sub> and CO.
<b>P</b>	Phosphorous.
<b>Permeability</b>	The facility with which a porous mass permits passage of a fluid. Soil permeability is determined using the 'constant head' method or the 'falling head' method.
<b>Permeate</b>	The product of a liquid passing through the pores of a membrane.
<b>pH</b>	A measure of the activity of hydrogen ions (H <sup>+</sup> ) in a solution and, therefore, its acidity, a number usually between 0 and 14, that indicates whether a solution is acidic (pH <7).
<b>Piezometer</b>	A small diameter water well used to measure the hydraulic head of groundwater in aquifers.
<b>PM<sub>2.5</sub></b>	Inhalable airborne particles equal or less than 2.5 micrometres in diameter.
<b>PM<sub>10</sub></b>	Inhalable airborne particles equal or less than 10 micrometres in diameter.
<b>Point Source</b>	A single identifiable point of emission of pollutants.
<b>Polymer</b>	Chains of simple monomers that form high-molecular-weight substances often used as a flocculant in wastewater treatment.
<b>Potable Water</b>	Water safe for human consumption.
<b>Potentiometric surface</b>	An imaginary surface defined by the level to which water in an aquifer would rise in a well due to the natural pressure in the rocks.
<b>pphm</b>	Parts per hundred million.
<b>ppm</b>	Parts per million, mg/m <sup>3</sup> of air.
<b>Process Wastewater</b>	Wastewater derived from areas involved in the processing of hogs.
<b>Provincial</b>	Within the Province of Manitoba.
<b>PTH</b>	Provincial Trunk Highway, Provincial Highway; a provincial highway in the Province of Manitoba.
<b>QUAL2K</b>	Water quality computer model.
<b>RCMP</b>	Royal Canadian Mounted Police.
<b>R.M.</b>	Rural Municipality.
<b>Regional</b>	Within 10 km (6.2 mi).
<b>Riprap</b>	A foundation or sustaining wall of stones or chunks of concrete thrown together without order.
<b>Rock Filter</b>	A filter comprised of bed of rocks often used for water polishing or algae removal. Reliably reduces BOD and TSS but not ammonia.
<b>Sand</b>	Material containing loose, unconsolidated accumulations of sediment.
<b>Sanitary Wastewater</b>	Wastewater produced from sanitary facilities including sinks, toilets and urinals.
<b>Screening</b>	The use of screens to remove solids and debris from wastewater.
<b>Screenings</b>	Materials, such as bone chips and straw, removed during screening.

<b>Sedge</b>	A grass-like plant often growing in wet areas.
<b>Sediment</b>	Any particulate matter that can be transported by fluid flow and which eventually is deposited as a layer of solid particles on the bed or bottom of a body of water or other liquid.
<b>Seepage</b>	The movement of water through the soil from unlined canals, ditches, laterals, watercourses, rivers, water storage facilities, or subsurface waters.
<b>Shale</b>	A consolidated clay rock which possesses closely-spaced well defined laminates.
<b>Silt</b>	Material of an earthy character intermediate in grain-size between sand and clay, with greater than 50% passing through a No. 200 sieve.
<b>Silt Fences</b>	A temporary barrier used to intercept sediment-laden runoff from small areas.
<b>Sludge</b>	A slurry or concentrated suspension of solids that accumulates at the bottom of a settling tank, clarifier or anaerobic digester or lagoon.
<b>SO<sub>2</sub></b>	Sulphur Dioxide, a pungent, colorless, gaseous pollutant formed primarily by the combustion of fossil fuels.
<b>Sodium hypochlorite</b>	NaOCl; commonly known as bleach, used to clean the membrane bioreactor.
<b>Sulphate</b>	SO <sub>4</sub> ; a salt of sulphuric acid, can be found in water.
<b>Soil series</b>	A grouping of soils that have similar soil profiles and are developed from a particular kind of parent material.
<b>Springhill Farms</b>	Springhill Farms L.P.; A pork processing facility in the Town of Neepawa, MB, source of wastewater for proposed IWWTF, subsidiary of Hytek Ltd.
<b>Sugar</b>	Carbon source added to post anoxic tank for nitrate removal.
<b>Supernatant</b>	The liquid that remains after suspended particles have been removed.
<b>Subsurface</b>	The geological zone beneath the surface of the Earth.
<b>Surface Water</b>	Water that sits or flows above the earth, including lakes, oceans, rivers, and streams.
<b>TDGA</b>	Transportation of Dangerous Goods Act.
<b>Till</b>	Dominantly unsorted and unstratified drift, generally deposited directly by and underneath a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders.
<b>TKN</b>	Total Kjeldahl Nitrogen; the total of the organic nitrogen and ammonia nitrogen.
<b>TN</b>	Total Nitrogen.
<b>TOC</b>	Total Organic Carbon.
<b>Town of Neepawa</b>	A town in Manitoba and Proponent of the proposed IWWTF.
<b>TP</b>	Total Phosphorous.
<b>TSP</b>	Total Suspended Particulates.
<b>TSS</b>	Total Suspended Solids.
<b>Turbidity</b>	A measure of water clarity.
<b>µg</b>	Microgram, 1x10 <sup>-6</sup> g; A unit of mass.
<b>UV</b>	Ultraviolet light used for disinfection.
<b>Unemployment Rate</b>	The percentage of employable population not working.
<b>Ungulate</b>	Hoofed animal such as deer.
<b>VOC</b>	Volatile Organic Compounds.

<b>WAS</b>	Waste Activated Sludge; the portion of activated sludge that is wasted and not recycled in the activated sludge process.
<b>Weir</b>	A low dam across a stream to raise water levels or divert the flow.
<b>Wetwell</b>	A chamber which is used for collecting liquid, and to which the suction pipe of a pump is attached.
<b>Whitemud River</b>	Receiving waters for the proposed IWWTF treated effluent.